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10/549,696	09/19/2005	Junji Takenaka	1691-0209PUS1	9538
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EXAMINER				
FREEMAN, JOHN D				
ART UNIT		PAPER NUMBER		
1794				
NOTIFICATION DATE		DELIVERY MODE		
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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

Notice of the Office communication was sent electronically on above-indicated "Notification Date" to the following e-mail address(es):

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# Office Action Summary

## Application No.

10/549,696

## Applicant(s)

TAKENAKA ET AL.

## Examiner

John Freeman

## Art Unit

1794

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 07 January 2008.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,2 and 4-14 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,2 and 4-14 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

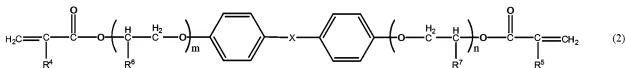
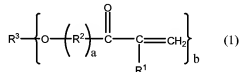
\* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

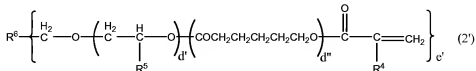
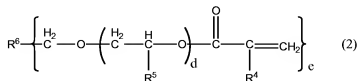
- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-8508)
- 4) ☐ Interview Summary (PTO-413)
- 5) ☐ Notice of Informal Patent Application
- 6) ☐ Other: \_\_\_\_\_
- Paper No(s)/Mail Date \_\_\_\_\_

**DETAILED ACTION*****Double Patenting***

- Claims 6, 9 and 10 are rejected on the ground of nonstatutory obviousness-type double patenting as being unpatentable over claims 1 and 2 of U.S. Patent No. 6,802,993. Although the conflicting claims are not identical, they are not patentably distinct from each other.
- Claims 6, 9 and 10 are directed to curable compositions comprising (I) a monomer represented by formula (1), (II) a monomer represented by formula (2), (III) a polymerizable monomer other than (1) or (2), (IV) any photochromic compound, and (V) polymerization initiators:



- Specific embodiments of these formulae result in compositions that overlap with U.S. 6,802,993.
- The polymerization initiators are either thermal (claim 6) or photo-induced (9, 10). The examiner interprets these as being functional equivalents for the purpose of starting a polymerization process.
- In U.S. 6,802,993, Momoda et al. claim a curable composition comprising (A) a polymerizable monomer following formula (2) or (2'), (B) a polymerizable monomer having a silanol group, (C) another polymerizable monomer different from (A) or (B), and (D) a photochromic compound:

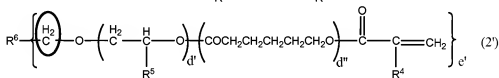
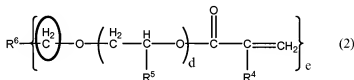


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6. Compound (I) is equivalent to compound (A) in claim 1 of 6,802,993:

a. When R4 of (A) is a hydrogen atom, or methyl group, it is the same as R1 of (I).

b. The circled CH2 of (2) and (2') of (A) below are considered to be a part of R3 in compound (I).



c. R2 of (I) can be  $-\text{CH}_2\text{CH}_2\text{O}-$ , or  $-\text{CH}_2\text{CH}(\text{CH}_3)\text{O}-$  making it equal to the 'd-bracket' of (A) if R5 is a hydrogen or a methyl group respectively.

d. R2 of (I) can be  $-\text{C}(=\text{O})\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{CH}_2\text{O}-$  making it equal to the 'd-bracket' of (A) if  $d'=0$ .

e. The integer b of (I) equals the integers e and e' of (A).

f. The integer a of (I) equals the integers d and d'' of (A).

7. Compound (II) is equivalent to compound (C) of 6,802,993; (II) is a polymerizable monomer different from (A) and (B).

8. Compound (III) is equivalent to compound (B) of 6,802,993. Compound (III) is defined as a polymerizable monomer different than monomers (I) and (II). A polymerizable monomer having a silanol group (C) is different from (I) and (II).

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9. The following table highlights the overlap of weight percentages of the compounds in their respective compositions.

Table I

	(I)	(A)	(II)	(C)	(III)	(B)
<b>Claim 1*</b>	-	1-50%	-	30-98.5%	-	0.5-20%
<b>6</b>	1-15%	-	10-80%	-	5-89%	-
<b>9</b>	1-60	-	10-90	-	0-89	-
<b>10</b>	10-60	-	20-90	-	0-70	-

\*=Claim in U.S. 6,802,993; all others are in 10/549696

10. Claim 2 of U.S. 6,802,993 further limits claim 1 by providing a more specific embodiment for compound (B). The limitation still overlaps with compound (III).

11. The amount of polymerization initiator used in claims 6, 9 and 10 is not specified. The examiner thus considers that Applicant claims any amount may be used, including that which is specified in U.S. 6,802,993.

12. Applicants attention is drawn to MPEP 804 where it is disclosed that "the specification can always be used as a dictionary to learn the meaning of a term in a patent claim." *In re Boylan*, 392 F.2d 1017, 157 USPQ 370 (CCPA 1968). Further, those portions of the specification which provide support for the patent claims may also be examined and considered when addressing the issue of whether a claim in an application defines an obvious variation of an invention claimed in the patent. (underlining added by examiner for emphasis) *In re Vogel*, 422 F.2d 438, 164 USPQ 619,622 (CCPA 1970).

13. Consistent with the above underlined portion of the MPEP citation, attention is drawn to column 19, lines 18-61 of Momoda ('993), where Momoda teaches the use of polymerization initiators, including thermo- and photo-polymerization initiators. Therefore it would have been obvious to one of ordinary skill to use the specification of '993 in carrying out the invention of claims 1 and 2, i.e. to make a curable composition having polymerization initiators.

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14. Claims 6, 9 and 10 are directed to an invention not patentably distinct from claim 1 and 2 of commonly assigned U.S. Patent No. 6,802,993. Specifically, they are not patentably distinct for the reasons set forth above.

15. The U.S. Patent and Trademark Office normally will not institute an interference between applications or a patent and an application of common ownership (see MPEP Chapter 2300). Commonly assigned U.S. Patent No. 6,802,993, discussed above, would form the basis for a rejection of the noted claims under 35 U.S.C. 103(a) if the commonly assigned case qualifies as prior art under 35 U.S.C. 102(e), (f) or (g) and the conflicting inventions were not commonly owned at the time the invention in this application was made. In order for the examiner to resolve this issue, the assignee can, under 35 U.S.C. 103(c) and 37 CFR 1.78(c), either show that the conflicting inventions were commonly owned at the time the invention in this application was made, or name the prior inventor of the conflicting subject matter.

A showing that the inventions were commonly owned at the time the invention in this application was made will preclude a rejection under 35 U.S.C. 103(a) based upon the commonly assigned case as a reference under 35 U.S.C. 102(f) or (g), or 35 U.S.C. 102(e) for applications pending on or after December 10, 2004.

### ***Claim Rejections - 35 USC § 102/103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

16. Claims 1, 4-7, 9-10 are rejected under 35 U.S.C. 102(b) as anticipated by or, in the alternative, under 35 U.S.C. 103(a) as obvious over Momoda et al. (EP 1130038).

17. Momoda et al. (EP 1130038) disclose a curable composition comprising (A) a polymerizable monomer, (B) a polyfunctional polymerizable monomer, (C) a difunctional polymerizable monomer, and (D) a photochromic compound.

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18. Component (A) is considered to be Applicants' component (III). Specific embodiments include polyethylene glycol methacrylate and methyl ether polyethylene glycol methacrylate [0037].
19. Component (B) is Applicants' component (I) [0050, formula (4)]. Specific embodiments include trimethylolpropane trimethacrylate and trimethylolpropane triacrylate [0052].
20. Component (C) is Applicants' component (II) [0057, formula (5)]. Specific embodiments include BPE (2,2-bis(4-methacryloyloxyethoxyphenyl)propane), diethylene glycol dimethacrylate and triethylene glycol dimethacrylate [0062].
21. Momoda et al. disclose the weights of (B) and (C) together, i.e. "...[(B) and (C)] are used in amounts of from 50 to 99% by mass...based on the total mass of the monomers..." [0069]. They then disclose the individual monomer weights in terms of the sum of both monomers: (B) is 2 to 50% by mass based on the sum of weights of (B) and (C), while (C) is 50-98% by mass based on the same sum. The following example shows how the weights overlap with those claimed by Applicants. If (B) and (C) combine to make 50% of the total weight of all monomers, and (B) constitutes 20% by weight of the sum of (B) and (C), and (C) constitutes 80% by weight of the same sum, then component (B) constitutes 10% of the total weight of all monomers and (C) constitutes 40% of the total weight.
22. The following table summarizes the weight percentage values (based on total weight of all monomers) for the instant application and '038:

**Table II**

	'038	Applicant					
		Claim 1	Claim 4	Claim 6	Claim 7	Claim 9	Claim 10
(A)/(III)	1-50%	5-89%	0-89%	5-89%	30-77	0-89%	0-70%
(B)/(I)	1-50	1-15	1-60	1-15	3-10	1-60	10-60
(C)/(II)	25-97	10-80	10-90	10-80	20-60	10-90	20-90

23. On the one hand, as seen in Table II, Momoda '038 clearly meets all the presently claimed weight percentage values.
24. On the other hand, as set forth in MPEP 2144.05, in the case where the claimed range "overlap or lie inside ranges disclosed by the prior art", a *prima facie* case of obviousness exists. In re Wertheim,

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541 F.2d 257, 191 USPQ 90 (CCPA 1976); In re Woodruff, 919 F.2d 1575, 16 USPQ2d 1934 (Fed. Cir. 1990).

25. The examiner takes the position that the cured product of these compositions would inherently have tensile strengths of 20 kgf, or, for those that do not have said strength, have tensile strengths close enough to said strength that it would have been obvious for one of ordinary skill in the art to optimize the ratio of monomers to achieve a product with higher tensile strength. One of ordinary skill would appreciate that the ratios of monomers used would affect the resultant tensile strength because of their varying hardness values. Lenses must be able to resist impacts and drilling in order to be of use. As such, one of ordinary skill would recognize the necessity of creating a lens that can withstand a baseline amount of abuse. Thus, one could reasonably experiment with the conditions of the invention to arrive at a tensile strength greater than 20kgf.

26. Component (D), like component (IV), is a photochromic compound, e.g. fulgimide and spirooxazine compounds [0081]. The half-life period of photochromic compounds (IV) is known to decrease upon transitioning from a polymerizable solution to a polymerized product [0004]. Although '038 is silent with regard to a cured product with a photochromic compound having a fading half-life of less than 30 times the half-life found in the curable composition, the examiner takes the position that the compositions inherently possess such properties. For example, Example 37 uses chromene 2, which is the same as chromene 2 of the instant application, and has a half-life of 0.7 minute. Although these examples are not fully analogous, they exemplify how, because of the broad range claimed, most any photochromic compound would exhibit half-life properties as claimed in the present invention in most any composition. Furthermore, one of ordinary skill in the art could arrive at such a property without undue experimentation because of the broad range.

27. Polymerization initiators such as benzoyl peroxide [0098] and benzoin [0102] can be used in the composition as in the case of component (V). The examiner notes that Applicant acknowledges that benzoin is a photopolymerization initiator on p21 line 15 of the specification.

28. With regard to the limitation of a photochromic lens substrate found in claims 1, 4 and 12-14, Momoda '038 teaches a lens material made from the composition [0094].

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29. With regard to the bifunctional to hexafunctional urethane oligomers or bifunctional to hexafunctional polyester oligomers of Claim 5, Momoda et al disclose the use of triurethaneoligomer tetraacrylate and urethaneoligomer hexamethacrylate [0052]. This is another example of component (B). It can, however, be used with the other examples of (B): trimethylolpropane trimethacrylate and urethaneoligomer hexamethacrylate can be used together [0052, ln. 10].

### ***Claim Rejections - 35 USC § 103***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

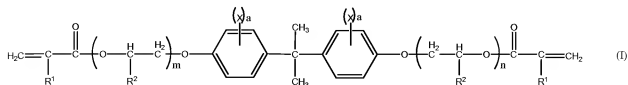
30. Claims 1-2, 4, 6, 8, 11 and 13 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momoda et al. (EP 1130038) in view of Imura et al. (U.S. 5,556,931).

31. Each claim presents a further limitation of an independent claim. Specifically, each claim further limits component (II) such that it is composed of two compounds each according to formula (2). Type one has a sum of  $(m+n)=0$  to 5. Type two has a sum of  $(m+n)=6$  to 30. Type two is present in a molar amount of no more than three times as much as type one.

32. Momoda et al. discloses the cured compositions of the parent claims as previously described.

33. While Momoda et al. disclose a value of  $(m+n)=2$  to 6 on average, they are silent with regard to higher  $(m+n)$  values [0057 p10 ln. 12].

34. Imura et al. disclose the following formula (I) for use in a lens substrate:



35. As the integer  $a$  can equal zero, this is the same as Applicants' formula (2) (col. 3 ln. 1+).

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36. Imura et al. disclose that each of  $m$  and  $n$  can be an integer from 1 to 15 (col. 3 ln. 55). They further teach that compounds with values of  $(m+n)=2$  to 3 are very hard (col. 5 ln. 2), while those with values of  $(m+n)=6-12$  are less hard, but better resist impacts (col. 5 ln. 24-29). Values over 12 result in even softer compounds (col. 5 ln. 29-32).

37. At the time of the invention, it would have been obvious to one of ordinary skill in the art to mix the hard and soft monomers in various ratios until a product with desired hardness, tensile strength and impact resistance was produced. One of ordinary skill would appreciate that having too much of monomers with  $(m+n)$  values over 12 would result in very soft compounds, and so would limit the amount of higher molecular weight monomers.

38. However, note that while Imura et al. does not disclose all the features of the present claimed invention, Imura et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely the proportions of monomers having different  $(m+n)$  values should be varied to achieve desired physical properties of a finished product and in combination with the primary reference, discloses the presently claimed invention.

39. Claims 1, 4, 12 and 14 are rejected under 35 U.S.C. 103(a) as being unpatentable over Momoda et al. (EP 1130038) in view of Geffcken et al. (U.S. 3,713,869).

40. Claims 12 and 14 are directed toward the cured compositions of claims 1 and 4 respectively, wherein the substrates have a hard coat layer and a buffer layer. The buffer layer is located between the substrate and the hard coat layer, and has a lower pencil hardness than the hard coat layer.

41. Momoda et al. teach the use of a hard coating agent to create a thin film on the cured product [0103] as in claims 12 and 14. They are silent, however, with regard to the use of a buffer layer interposed between the substrate and the hard coating layer.

42. The use of intermediate (or buffer) layers to promote adhesion between a hard coating and a lens substrate is well-known in the art. For example, Geffcken et al. disclose the use of an intermediate layer

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between a hard inorganic layer and a plastic substrate (col. 2 ln. 56+). The polymer-based intermediate or primer layer improves the adhesion of hard layer to the plastic substrate, said intermediate layer would inherently have a pencil hardness less than the hard inorganic layer.

43. At the time of the invention, it would have been obvious to one of ordinary skill in the art to use a softer polymer-based buffer layer between the hard coating layer and the lens to promote adhesion between them.

44. Note that while Geffcken et al. does not disclose all the features of the present claimed invention, Geffcken et al. is used as teaching reference, and therefore, it is not necessary for this secondary reference to contain all the features of the presently claimed invention, *In re Nievelt*, 482 F.2d 965, 179 USPQ 224, 226 (CCPA 1973), *In re Keller* 624 F.2d 413, 208 USPQ 871, 881 (CCPA 1981). Rather this reference teaches a certain concept, namely softer intermediate layers promote adhesion between a hard outer coat and a plastic lens and in combination with the primary reference, discloses the presently claimed invention.

### ***Claim Rejections - 35 USC § 112***

45. The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

46. Claims 1-2 and 4-14 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

47. Claims 1 and 4, and therefore their dependents, describe a photochromic compound (IV), but later limit the half-life of "the photochromic compound (III)". It is unclear what Applicant intends. The examiner interprets the claim to limit the half-life of photochromic compound (IV).

48. Claims 4, 6 and 9 refer to describe monomers (I) and (II) as being represented by "the above formula (1)" and "the above formula (2)" respectively. This terminology renders the claim indefinite because it is unclear where "above" refers to. Furthermore, claims 4 and 6 are independent claims and

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should therefore not be construed to have dependencies. For clarity, the examiner suggests Applicant adds the respective formulas to the claims.

### ***Response to Arguments***

49. Applicant's arguments filed 7 January 2008 have been fully considered but they are not persuasive.

50. Regarding the Double Patenting rejection over Momoda ('993), the examiner maintains the rejection. Applicant argues that composition in claims 1 and 2 of '993 do not contain polymerization initiators, nor limit the photochromic compound to one with a half-life period in the cured product of 30 times or less shorter half-life in the curable composition. However, Momoda ('993) teaches the use of polymerization initiators, including thermo- and photo-polymerization initiators (col 19 ln 18-61). The examiner notes that claims 6, 9 and 10 of the present application do not require a photochromic compound having specific half-life properties. Regardless, the examiner takes the position that the cured products of '993 would inherently possess the half-life properties described by Applicant. Chromene 1 of '993 is the same as Applicant's chromene 2, hereinafter referred to as the chromene compound. Judging from Applicant's Examples 7-9 (those examples with the chromene compound), the half-life of those compositions (1.7-1.8 minutes) are actually longer than those examples 1-10 of '993 (1.1-1.5 minutes). Even though the compositions are not the same, the examiner takes this as evidence that the range claimed by Applicant is so broad that nearly any photochromic compound would fulfill this limitation.

51. While Applicant asserts that claims 6, 9-10 are directed toward a curable composition wherein the cured product has a tensile strength of 20kgf or more, such a limitation is not in the claims. Also, while Applicant filed a 1.132 declaration to support their position that Momoda ('993) discloses a composition with a tensile strength lower than that of the presently claimed invention, the declaration is not persuasive given that claims 6, 9, and 10 of the present application do not require a cured product having a specific tensile strength.

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52. Regarding rejections based on Momoda (EP 1130038):

53. Claim 4 has been added to the rejection as originally intended. Applicant submits that '038 fails to teach the curable composition because each example includes a thermoinitiator, but '038 specifically teaches that photopolymerization initiators are suitable, for example benzoin [0102]. Applicant asserts BPE is not taught by '038, however, "applicant must look to the whole reference for what it teaches. Applicant cannot merely rely on the examples and argue that the reference did not teach others." In re Courtright, 377 F.2d 647, 153 USPQ 735,739 (CCPA 1967). With this in mind, Momoda ('038) teaches BPE as a specific example of component (C) [0062].

54. Applicant argues that Momoda '038 does not meet the limitation regarding the half-life properties of the photochromic compound, or the tensile strength of the cured product. As explained in more detail in the body of the rejection, the examiner takes the position that the cured product of these compositions would inherently have tensile strengths of 20 kgf, or, for those that do not have said strength, have tensile strengths close enough to said strength that it would have been obvious for one of ordinary skill in the art to optimize the ratio of monomers to achieve a product with higher tensile strength. Also explained in more detail in the body of the rejection, the examiner takes the position that the compositions inherently possess the described half-life properties.

55. Applicant's arguments, see p8, with respect to rejections under 102(e) have been fully considered and are persuasive. The rejection of claims 6, 9 and 10 has been withdrawn. Momoda '993 is not a valid prior art reference under 102(e) for the current application.

56. Regarding previous rejections based on Momoda '038 under 103(a), the examiner has addressed how '038 teaches the photochromic lens substrates.

57. Regarding rejections of claims 2, 8, 11 and 13 based on Momoda '038 in view of Imura '931, the examiner does not argue that Imura does not disclose the present invention; it is used as a teaching reference. The examiner takes the position that one of ordinary skill in the art would recognize that varying the (m+n) values would result in different properties for the final lens product, and could use Imura as a guide as to what properties would result.

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58. Regarding rejections of claims 12 and 14 under Momoda '038 in view of Geffcken '869, the examiner takes the position that although Geffcken is silent with regard to the present invention's lens substrate, the teaching reference is evidence that using an adhesion promoting buffer layer between a lens substrate and a hard coating layer is well-known in the art.

### ***Conclusion***

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John Freeman whose telephone number is (571)270-3469. The examiner can normally be reached on Monday-Friday 7:30-5:00PM EST (First Friday off).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Callie Shosho can be reached on (571)272-1123. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

John Freeman  
Examiner  
Art Unit 1794

/J. F./  
Examiner, Art Unit 1794

/Callie E. Shosho/  
Supervisory Patent Examiner, Art Unit 1794